

Improving Evidence-Based Planning for Watersheds in the Philippines:

Final Technical Report

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1. EXECUTIVE SUMMARY

This is the Final Technical Report of the project, *Improving Evidence-based Planning for Watersheds in the Philippines*. The objective of the project, which was financially supported by Canada's International Research and Development Center (IDRC) and managed by the Canadian Urban Institute (CUI), was to build capacity for evidence-based planning on a watershed basis. The initiative was undertaken in the Province of Iloilo, with the idea that it could then be used as a model for other local governments across the Philippines to reduce the risk of natural disasters. The project delivery partners are the Iloilo Provincial Environment and Natural Resources Office (PENRO) and the University of the Philippines Visayas (UPV). The project commenced in March 2015 and all work was completed prior to the end of August 2016.

Watershed management is an important aspect of environmental management and governance in the Philippines. This is becoming increasingly significant as environmental events, such as storms, increase in number and severity. Better watershed management practices are vital to maintaining the region's economic competitiveness and to safeguard communities.

One of the issues facing the Philippines is that, although there is an array of national policies to improve environmental conditions, the nation suffers from fragmentation of local efforts to manage its watersheds. The Province of Ontario, Canada, has created an effective system where local environmental governance is based on watershed boundaries. Therefore, based on the success of this system, this project focuses on increased collaboration and sharing of best practices on watershed management between Canada and the Philippines. Other specific objectives included improving the collaboration between local governments and academic institutions for watershed data collection, analysis and ongoing monitoring, and the creation of a Watershed Report Card template and rating system that can be used by local authorities to improve community awareness and engagement in watershed stewardship.

The main deliverables for the project consisted of a review of comparative policy and best practices in ecosystem-based planning and management in Canada and the Philippines; selection of monitoring indicators for watershed management; the development of a template to guide the preparation of report cards to communicate current watershed conditions based on important indicators of health and sustainability and development of a monitoring framework to guide Philippine watershed managers in collecting and evaluating current data based on important indicators of health and sustainability. The aim is to promote standardized collection protocols to ensure that data is reliable, consistent and defensible and to increase the capacity for evidence-based planning on a watershed basis. The project also established a model that will be replicated by academic institutions and other local governments in the Philippines that are striving to improve the state of the country's watersheds.

After conducting best practices research on watershed management practices in Canada, a list of indicators and metrics were generated from the research findings. These indicators are to be used by local agencies and practitioners to develop a baseline measurement of watershed health and to monitor the health of the watershed going forward. These indicators are contained within the Watershed Monitoring Framework which guides the collection of information within the watershed. A Watershed Report Card template was also created to communicate the information that is collected through the Watershed Monitoring Framework.



The project outputs have been enthusiastically received and shared. The Department of Environment and Natural Resources (DENR) is holding a regional watershed/river basin climate change activity in October 2016 and will be holding up this project as a model and tool for local communities. Project documentation has been circulated to relevant local government bodies, national government agencies, NGOs, and other donors in the Province for use as watershed management and monitoring. The Watershed Report Card initiative was given mention as being part of the award-winning *Action for Re-greening and Transformation for Climate Change Adaption Program* put forth by Iloilo's Provincial Governor (see [here](#)). In August 2016, the Iloilo Watershed Management Council (IWMC) convened and the project's outputs were presented to the region's Mayors, Municipal Legislators, municipal environment and natural resource officers, the Governor, the Department of Environment and Natural Resources (DENR) and other agencies. All documents were endorsed by the IWMC and direction given to the Provincial Legislative Office to develop an ordinance using the project documents as basis for watershed management and planning in the whole province.



Iloilo Provincial Governor Defensor (far left) together with members of the Iloilo Watershed Management Committee take an oath to adopt the Watershed Monitoring Framework and Watershed Report Card Template on August 10, 2016.



2. THE RESEARCH PROBLEM



Watershed management is an important aspect of environmental management and governance in the Philippines. This is becoming increasingly significant as environmental events, such as storms, increase in number and severity. Better watershed management practices are vital to maintaining the region's economic competitiveness and to safeguard communities. Approaches and methodologies of evidence-based planning on a watershed basis can be applicable to the Philippines if adapted to build on local capacity and knowledge and to suit local realities. This initiative was undertaken in one province and could act as a model for other local governments across the Philippines to reduce the risk of natural disasters.

One of the issues facing the Philippines is that, although there is an array of national policies to improve environmental conditions, the nation suffers from fragmentation of local efforts to manage its watersheds. The Province of Ontario, Canada, has created an effective system where local environmental governance is based on watershed boundaries. Therefore, based on the success of this system, this project focused on increased collaboration and sharing of best practices on watershed management between Canada and the Philippines.

The research questions to be answered included:

- What is the full suite of indicators appropriate for measuring the state of watersheds in Iloilo Province, and what would be the minimum subset of shared indicators to be applied to all watersheds?
- How could these indicators be easily and regularly measured, drawing on available resources within the local government system and leveraging involvement of communities and the academic sector?
- What watershed reporting format and rating system would assist local governments and watershed stewardship groups in the compilation, analysis and presentation of information to stakeholders and the public?

The Philippines is representative of many developing countries that are highly vulnerable to similar environmental threats therefore allowing the project results to be applicable to other countries facing similar challenges.



3. PROGRESS TOWARDS MILESTONES

The project achieved all of the milestones it set out to achieve. The project set out to develop a number of documents with stakeholder input and dissemination of project materials. All documents were completed, stakeholder input was sought and integrated and project materials circulated. A summary of each document and status of each project milestone is described below.

3.1 BEST PRACTICES IN ECOSYSTEM-BASED PLANNING AND MANAGEMENT IN CANADA AND THE PHILIPPINES.

To research best practices in watershed management, CUI investigated what Canada has been doing in ecosystem-system based management strategies and approaches. The report highlights the major organizations who are involved in watershed management and planning in Canada. A number of Canadian student interns supported this work. In addition, a report on watershed management practices in the Philippines was prepared by a team of Filipino students with a professor overseeing the work. The Canadian report can be found [here](#) and the Philippines report [here](#).

3.2 WATERSHED INDICATORS AND ASSOCIATED METRICS FOR URBAN AND RURAL TYPOLOGIES.

Watershed indicators and metrics to measure the indicators were created to monitor and communicate watershed conditions. These indicators are derived from consultations with technical experts and through best practice research. The chosen indicators include natural cover, biodiversity, water, agriculture and land-use, waste management, and governance of the watershed. These indicators are the key components to the watershed monitoring framework, found [here](#).

3.3 WATERSHED MONITORING FRAMEWORK.

The monitoring framework was largely derived by referring to the best practices identified in the comparative policy research. The purpose of the framework is to guide Philippine watershed managers in collecting useful information to be presented in future watershed report cards and in other applications. The monitoring framework provides a baseline from which to start that can evolve as information, technology, and resource allocation change. The monitoring framework identifies important variables and guides the collection of information pertaining to the indicators chosen to communicate watershed health. In time, the cumulative body of information generated by regular monitoring will identify long-term changes, provide the basis for statistical analysis and demonstrate trends in measured conditions. This information will aid in communicating to decision makers and the public about how watershed health may be getting better or worse.

While the overall aim of a monitoring framework is to help characterize the entire watershed, sub-watershed level reporting is effective and the most efficient way to collect and communicate data to target audiences. It was determined that important variables to monitor are natural cover, biodiversity, agriculture and land use, water, waste management, and governance. It is suggested that pilot surveys which test the sampling network be undertaken prior to a comprehensive monitoring campaign. The framework stipulates specific measuring techniques and methods for each of the variables that are to be followed when conducting the all-out monitoring campaign. The Monitoring Framework can be found [here](#).



3.4 WATERSHED REPORT CARD TEMPLATE.

The watershed report card is the means of communicating the information generated by the monitoring framework implementation. It is how the monitoring data is transformed effectively into statements about watershed health. It allows the watershed managers to determine the health of the watershed based on the indicators, communicate the findings in a way that is easily understood by the target audience, identify short and long term targets, and use the findings as a benchmark to determine if the health of the watershed is improving or degrading further over time. The Template for Preparing Report Cards on the Health of Watersheds in the Philippines can be found [here](#)

3.5 SUMMARY REPORT.

The Summary Report provides an overview of the project. The research problem, the rationale for the project, methods, descriptions of the outputs, and lesson learned are all contained in the document. The document was used and distributed to partners in both Canada and the Philippines. The summary report can be found [here](#).





4. SYNTHESIS OF RESEARCH RESULTS AND DEVELOPMENT OUTCOMES

The main outcomes of the project were:

1. **Increased capacity of watershed management professionals** within Iloilo province to prepare objective, science-based and comparable analyses of the conditions and dynamics occurring in watersheds in Iloilo province. The research reports provided best practice information from which to base the development of indicators and a monitoring framework, as well as watershed report card template.
2. **Increased awareness by national and local decision-makers, community stakeholders and local inhabitants** of the trends, critical issues, challenges and actions needed to manage their watersheds in the future. Stakeholders across the province participated and provided input to the development of the project materials and copies of all project documentation have been circulated to relevant local government bodies, national government agencies, NGOs, and other donors for use as watershed management and monitoring. The Watershed Report Card initiative was given mention as being part of the award-winning Action for Re-greening and Transformation for Climate Change Adaption Program put forth by Iloilo's Provincial Governor (see [here](#)).
3. **Strengthened engagement of academic groups and community organizations** in watershed stewardship activities in Iloilo province. The University of the Philippines Western Visayas led components of the project and worked closely with the Provincial Government. In addition, a number of community organizations, such as the Kahublagan sa Panimalay Foundation, a local community group focused on rainwater harvesting and watershed regeneration.
4. **Increased knowledge of local authorities and involved organizations** in the Philippines and Canada of innovative, evidence-based approaches to watershed planning and management. In addition, the Department of Environment and Natural Resources (DENR) is holding a regional watershed/river basin climate change activity in October 2016 and will be holding up this project as a best practice. Local decision makers, understanding the relationship between good watershed management and more resilient regions, wholeheartedly supported the project and are taking steps to enshrining the documents into an ordinance as the basis for watershed management and planning in the whole province.



5. LESSONS LEARNED

The project consulted a number of technical experts to ensure that relevant and diverse expertise was included in the product outputs and the outputs would be available to those who would benefit from this knowledge. While this was beneficial, to further increase capacity, it would be useful to maintain a watershed-academe partnership for maintaining the technical aspects of monitoring and supporting reports for the future. While academic institutions did cooperate for the purposes of this project, and in past activities involving the Canadian Urban Institute, often these partnerships are donor driven and are not well maintained once outside funding ends.

The outputs of the project are excellent watershed development tools but in order to ensure that this is sustained, a legal support mechanism and institutional monitoring is required. Legislators and policy makers need to be educated on watershed concerns.

The opportunity to collaborate with technical experts was one of the strengths of the project. This hugely enhanced the quality of the project and provided an element of legitimacy. In addition, it provided the added element of ownership of results and a stake in seeing project activities continue after the project ends.

6. METHODOLOGY

Secondary research was the primary method of data collection for the comparative policy analysis of watershed management policies in Canada and the Philippines. The early drafts of the documents were informed by the comparative analysis. For other deliverables, a series of consultations, workshops and validation activities were designed and conducted to capture the opinion of subject experts and a wide range of community stakeholders. Below is a further description of the methodology:



6.1 APPLIED RESEARCH.

A research document was developed based on secondary research on best practices in eco-system-based planning and management in Canada. This included an examination of governance structures; inter-governmental coordination; planning approaches; community and stakeholder engagement; data collection, analysis, management, reporting and rating techniques; and partnerships with academic institutions and watershed stewardship groups. A similar report was developed looking at systems in the Philippines but given the dearth of information and best practices within the Philippines, the report is more of a short annotated bibliography of documents in the Philippines, a larger bibliography of Canadian approaches and some analysis comparing approaches of Canada and Philippines in order to find out the most compatible and reliable method or approach of watershed management.

6.2 PROJECT ORGANIZATION.

Prior to work commencing, a Project Steering Committee was formed between the Canadian Urban Institute, the Iloilo Provincial Environment and Natural Resources Office (PENRO) and representatives from the University of the Philippines Visayas (UPV). The Steering Committee drafted a Memorandum of Understanding and jointly developed a detailed workplan, budget and performance measurement framework to guide the achievement of project outcomes. The Memorandum of Understanding was signed by all parties in mid-2015.

6.3 STAKEHOLDER WORKSHOPS.

The project helped local partners to determine a set of indicators to be used for communicating the health of watersheds. The indicators were chosen to best suit the specific local context and audience. An initial list of indicators had been developed in an earlier project led by CUI. This list was used as the starting point for this project. A series of ten, 3 day workshops and seminars were held by PENRO and the UPV. Each workshop featured different local partners and stakeholders to participate, based on their area of expertise. Workshops focused on the indicator themes of forest and natural cover, water, biodiversity, waste management, land use, agriculture, riparian and coastal management, water governance and mapping. Indicators were evaluated by participants, targets set and ranking determined. A final set of roundtable discussions were held to look at the documents in whole and to ensure their appropriateness. Once these indicators were determined, PENRO, UPV faculty and students, and with technical input from CUI, a monitoring framework was developed. Another series of workshops were held to seek local input and verify the validity of the monitoring for each indicator. Finally, a Watershed Report Card template was designed in order to report on the health and progress of the watershed and to improve evidence-based decision making for watershed rehabilitation. The initial template was prepared by UPV, PENRO and CUI consultants. This draft was then shared widely with stakeholders and evaluated at the same series of workshops as hosted for the monitoring protocols. The final workshop focused on pilot testing the design with particular attention on how it communicated to the preferred audience. A summary of the consultations is included in the Report Card Template.



6.4 ROUNDTABLE DISCUSSIONS.

Roundtable discussions were held so that project partners could engage with key stakeholders about the penultimate documents and to discuss the whole project. This provided participants the opportunity to view the whole project in context and provide input beyond their sectoral areas of expertise. The event was also used to evaluate project achievements, define lessons learned and provide a series of next steps on improving watershed health.

6.5 TIGUM-AGANAN WATERSHED AND ILOILO WATERSHED MANAGEMENT BOARDS.

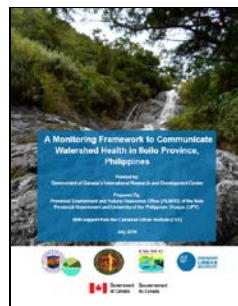
The Tigum-Aganan Watershed Management Board (TAWMB) was a key stakeholder and contributor to this and earlier work done through CUI in the Province. Because of this history, and its urban and rural nature, the TAWMB was used as the sample watershed for the watershed report card template and monitoring framework. Project partners also kept the Iloilo Watershed Management Board (IWMB) informed on project activities. The most recent IWMB meeting held on August 9, 2016 involved members pledging to accept the project's outputs and moving forward to enshrine the frameworks into local legislation.



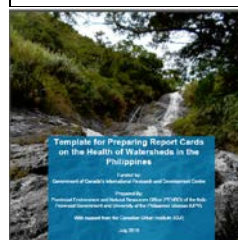


7. PROJECT OUTPUTS

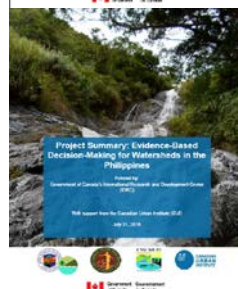
All planned project outputs have been completed. Materials were printed and shared with agencies, municipalities and other provinces in the Philippines. The materials are public and are available online for viewing or downloading freely by any one finding the information and tools useful and applicable to their own situation.



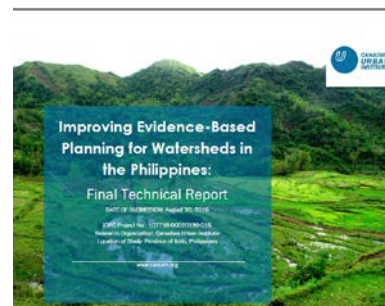
[Watershed monitoring framework \(includes watershed indicators and associated metrics for urban and rural typologies\)](#)



[Watershed Report Card Template](#)



[Project Summary](#)



[Improving Evidence-Based Planning for Watersheds in the Philippines: Final Technical Report](#)



[Best practices in ecosystem-based planning and management in Canada](#)



[Comparative Policy Research on Best Practices in Ecosystem-Based Planning and Management in Iloilo, Philippines and Canada](#)



8. PROBLEMS AND CHALLENGES

While overall all project outputs were achieved, there were a number of challenges that had to be overcome:

Government agencies working with academic institutions. In order to ensure development and use of a sound, evidence-based planning methodology, the project partners were selected from both government and the academic sector. However, the two partner organizations, the Iloilo Provincial Environment and Natural Resources Office (PENRO) and the University of the Philippines Visayas (UPV), did not have a history of working together when this project started. There also seemed to be some confusion around specific roles and responsibilities of each partner. In addition, the physical distance between partners (PENRO is based in Iloilo City and UPV is located in Miagao, about an hour away) was a hindrance. CUI helped to facilitate constructive engagement and clarify roles and responsibilities. More time and experience is needed for these diverse groups to learn to work together better.

Resource challenges. The budget of this project was rather limited. It largely required the in-kind contribution from all partners, and even the workshop budget was rather limited. As such, clever and careful planning and managing of resources had to take place. A more fulsome budget would have allowed a much deeper engagement process and more visually appealing documentation. The use of GIS also had to be limited given resource constraints. Both partners requested new computer equipment to aid in the data gathering and documentation process. Since the budget did not allow this purchase, CUI facilitated by donating two new laptops to project partners.

Time delays. Given the resource constraints and the limited scope of the project, CUI expected all project activities to be completed early in 2016. While all activities were completed before the end of August 2016, CUI had been hoping to save project resources by containing the work into a shorter period.

Research on Philippines best practices. There was very little written documentation on any watershed practices in the Philippines beyond what had been done and documented in an earlier phase of project work with the Canadian Urban Institute in the province. As such, it was challenging for UPV students to conduct fulsome research. As a result, the focus of the research was on comparing Philippines and Canadian approaches and analyzing what might work for the Philippines.

9. OVERALL ASSESSMENT AND RECOMMENDATIONS

Beyond what is described in Section 8 above, the project team did not have any concerns.



10. FULL WEB LINKS TO DOWNLOADABLE PROJECT OUTPUTS

1. Improving Evidence-Based Planning for Watersheds in the Philippines: Final Technical Report: https://issuu.com/canadianurbaninstitute/docs/technical_report
2. Best practices in ecosystem-based planning and management in Canada and the Philippines: https://issuu.com/canadianurbaninstitute/docs/best_practices.philippines.idrc.160 and https://issuu.com/canadianurbaninstitute/docs/idrc_-_canadian_best_practices_repo
3. Watershed monitoring framework (includes watershed indicators and associated metrics for urban and rural typologies): <https://issuu.com/canadianurbaninstitute/docs/idrc.monitoringframework.160810>
4. Watershed Report Card: <https://issuu.com/canadianurbaninstitute/docs/idrc.reportcardtemplate.aug2016>
5. Summary Report: https://issuu.com/canadianurbaninstitute/docs/philippines_summary_report



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